भारतीय मानक

Indian Standard

IS 12910 : 2023

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(पहला पुनरीक्षण)

Textiles Machinery — Reed — Guide for Selection

(First Revision)

ICS 59.120.30

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Textile Machinery and Accessories Sectional Committee, TXD 14

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

The loom component responsible for the beat up is called reed. The reed, which is like a metallic comb, is carried by sley which sways forward and backwards due to the crank-connecting rod mechanism.

This standard was originally published in 1990. The standard has again been revised to incorporate the following major changes:

a) Definition of reed count and dent has been included; and
b) Functions of reed has been included.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES MACHINERY — REED — GUIDE FOR SELECTION

(First Revision)

1 SCOPE

This standard specifies equipment and recommends procedure for selection of reed, with a view to reduce the incidence of warp streaks in the resultant fabric, namely, plain woven cotton fabric.

2 DEFINITIONS

2.1 Warp Streaks

Narrow warpwise bands which are characterized by some difference in shade or lustre from the adjacent normal warp. When the dyed fabric is viewed in reflected light the bare stripes look darker and the dense stripes look lighter in shade than the body of the fabric. The narrow light/dark bands run exactly along the warp for several metres almost continuously.

2.2 Warp Cover Factor

A number indicating the degree of coverage of the fabric area by the warp threads. In case of cotton count system:

$$\text{Warp cover factor} = \frac{\text{No.of ends per centimetre} \times 2.54}{\sqrt{\text{Cotton count (Ne) of warp}}}$$

2.3 Denting Order

Number of warp threads drawn through each dent of reed.

2.4 Moire Pattern

The alternate dark and light bands formed when a series of equispaced lines are superimposed at an angle on another similar series (nearly equispaced reed wires in this case), the waviness observed being a measure of unevenness of dent spacing in the reed.

2.5 Reed Count

The reed count is a number which expresses the spacing of wires in the reed.

2.6 Dent

The distance between two wires is a space called dent.

3 PRINCIPLE

Suitability of the reed is decided by obtaining a judgment of a number of respondents with reference to a trait (non-uniform dent spacing of individual reed). The respondents rate nonuniformity with reference to three fiducial standards.

4 FUNCTIONS OF REED

a) It beats up the last-laid pick into the fell of the cloth;

b) It keeps the warp threads in their respective positions;

c) It determines the cloth width;

d) The density of combs in the reed taken in conjunction with the set of heald shafts determines the fineness of cloth; and

e) It acts as a guide for the shuttle while travelling over the race board.

5 EQUIPMENT

Any instrument to assess the non-uniformity in dent spacing of reed by observing the moire pattern of reeds may be used.

NOTE — ATIRA plastic grating or Shirley reed grating glass or any other similar grating may be used.

6 PROCEDURE FOR SELECTION OF REED

6.1 Calculate the warp cover factor of the fabric under consideration using the expression:

$$\frac{\text{No. of ends per centimetre} \times 2.54}{\sqrt{\text{Cotton count (Ne) of warp}}}$$

6.2 From Table 1 (gives the maximum permissible reed rating); first choose the acceptable level of streakiness in the fabric (either excellent or good or satisfactory or poor) and suitable denting order.

6.3 From Table 1 read the corresponding level of streakiness (*Max*) in the reed against the chosen acceptable level of streakiness in the fabric under the appropriate warp-cover-factor column and the corresponding sub-column of the denting order.

6.4 Examine the quality of each reed by comparing its moire pattern with the standard photograph with pre-assigned fiducial rating of 2, 4 or 6 and assign its rating on an arbitrary scale (1 to 7). Identify each reed by a tag carrying its assigned rating to avoid mix up. For producing fabric under consideration use the reed with rating equal to or less than the specified reed rating.

NOTE — Reed with higher rating may be used for denser fabrics or striped or check fabrics where warp streaks are less visible.

6.5 In order to select the reed an illustrative example is given below:

Example:

Fabric particulars : Poplin
Warp yarn count : 36^s Ne (16.4 tex)
Ends per cm : 47
Denting order : 4 per dent

Maximum permissible reed rating for attaining 'Good' acceptable level of streakiness in the fabric may be determined as under:

$$\text{Warp cover} = \frac{\text{No. of ends per centimetre} \times 2.54}{\sqrt{\text{Cotton count (Ne) of warp}}}$$

$$= \frac{47 \times 2.54}{\sqrt{36}}$$

$$= 20$$

Reed rating for warp cover factor of 20 and denting order of 4 as given in last column of Table 1 for 'Good' acceptable level is 4 that is only those reeds having rating equal to or less than 4 shall be used for manufacturing the corresponding fabric.

Table 1 Rating of Reed

(*Clauses* 6.2, 6.3 *and* 6.5)

Sl No.	**Warp Cover Factor**	**9.0-12.0**		**12.1-15.0**		**15.1-18.0**		**18.1-21.0**		
	Type of Fabric	**Lawn, Voile**		**Cambric, Lawn, Long Cloth**		**Long Cloth, Medium Poplin**		**Heavy Poplin**		
(1)	(2)	(3)		(4)		(5)		(6)		
i)	Denting order	2	3	2	3	2	3	2	3	4
ii)	Acceptable level of streakiness:	Rating								
	a) Excellent (almost streak free)	1	1	1	1	1	1	3	2	1
	b) Good (slightly streaky)	2	2	2	2	3	2	6	5	4
	c) Satisfactory (tolerably streaky)	4	3	4	4	6	5	S*	S*	7
	d) Poor (excessively streaky)	6	5	6	6	S*	S*	S*	S*	S*

NOTES

1 S* = More than 7

2 The reed ratings are generally applicable for plain-woven cotton fabrics (dyed/mercerized) with warp cover factor ranging from 9 to 21 (voiles, lawns, cambrics, long cloths, poplins, saris, dhotis, etc).

3 The correlation between streakiness in fabric with reed ratings is low but statistically significant. Therefore choosing better reeds helps to reduce the incidence of streakiness in the fabric considerably, but may not entirely eliminated it.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Textile Machinery and Accessories Sectional Committee, TXD 14

Organization	*Representative(s)*
Central Manufacturing Technology Institute, Bengaluru	Dr Nagahanumaian (***Chairperson***)
Amritlakshmi Machine Works, Mumbai	Shri N. K. Brahmachari Shri N. K. Raut (*Alternate*)
ATE Enterprises Private Limited, New Delhi	Shri Abhijit Kulkarni Shri Anil Kumar Sharma (*Alternate*)
Bajaj Industries Private Limited, Kolkata	Representative
Bhowmick Calculator, Kolkata	Shri Goutam Bhowmick Shri Vivekananda Bhowmick (*Alternate*)
Central Manufacturing Technology Institute, Bengaluru	Shri B. R. Mohanraj Shri K. Saravanan (*Alternate*)
Confederation of Indian Textile Industry, New Delhi	Shri Ajay Kumar
Dashmesh Jacquard and Powerloom Private Limited, Panipat	Shri Rajmeet Dhammu (*Representative*)
HLL Lifecare Limited, Noida	Shri Akhil G. S. Shri Ratnakar Gupta (*Alternate*)
ICAR-Central Institute for Research on Cotton Technology, Mumbai	Dr N. Shanmugam Dr T. Senthilkumar (*Alternate*)
India ITME Society, Mumbai	Shri Prashant Mangukia Shrimati Seema Srivastava (*Alternate*)
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Indian Jute Mils Association, Kolkata	Representative
Indian Textile Accessories and Machinery Manufacturers Association, Mumbai	Shri N. D. Mhatre Shri Chandresh Shah (*Alternate*)
Inspiron Engineering Private Limited, Ahmedabad	Shri Sanjay Kowarkar Shri Ankur Soni (*Alternate*)
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Lakshmi Machine Works Limited, Coimbatore	Ms Kalpana A. Ms Divya V. (*Alternate*)
Laxmi Shuttleless Looms Private Limited, Ahmedabad	Shri Ketan Sanghvi

Organization	*Representative(s)*
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National Safety Council, Navi Mumbai	SHRI LALIT R. GABHANE SHRI R. R. DEOGHARE (*Alternate*)
Office of the Textile Commissioner, Mumbai	SHRI C. R. KALESAN SHRI JAGRAM MEENA (*Alternate*)
Peass Industrial Engineers Private Limited, Navari	SHRI RAVI S. RAO SHRI JIGNESH B. PATEL (*Alternate*)
Technocraft Industries India Limited, Mumbai	SHRI RAVINDER KUMAR SHRI DURADUNDESHWAR HIREMATH (*Alternate*)
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The Synthetic and Art Silk Mills Research Association, Mumbai	DR MANISHA MATHUR SHRI SANJAY SAINI (*Alternate*)
The Textile Association (India), Mumbai	SHRI J. B. SOMA SHRI ASHOK JUNEJA (*Alternate*)
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United Nations International Children's Emergency Fund, New Delhi	DR PRATIBHA SINGH SHRI YUSUF KABIR (*Alternate*)
Veermata Jijabai Technological Institute, Mumbai	DR SURANJANA GANGOPADHYAY SHRI S. P. BORKAR (*Alternate*)
BIS Directorate General	SHRI J. K. GUPTA, SCIENTIST ‘E’/DIRECTOR AND HEAD (TEXTILES) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI SWAPNIL
SCIENTIST ‘B’/ASSISTANT DIRECTOR
(TEXTILES), BIS

Bureau of Indian Standards

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